RETICULUM-CELL SARCOMA IN INFANCY

BY
WALLACE M. DENNISON
From a Surgical Unit, the Royal Hospital for Sick Children, Glasgow
(RECEIVED FOR PUBLICATION APRIL 18, 1955)

With the exception of the leukaemias and tumours of the central nervous system any single type of malignant tumour is relatively uncommon in infancy and childhood, and few surgeons have extensive personal experience of the life history of these tumours.

A case is presented, first to show the difficulty of early diagnosis and secondly as an example of an apparent cure of a reticulum-cell sarcoma.

In August, 1948, at the age of 1 year, this baby girl was admitted to the surgical wards of the Royal Hospital for Sick Children, Glasgow, with a red, hot and painful swelling of the left leg of 10 days' duration. The temperature was 101°F. and the white blood count 8,000. A diagnosis of haematogenous osteitis was made, the limb was immobilized, and, after removing venous blood for culture, penicillin therapy was started. Radiography the following day revealed an area of decalcification in the upper tibial metaphysis (Fig. 1), and the bacteriologist reported a pure growth of coagulase-positive Staphylococcus aureus from the blood culture. Within three days the temperature was normal and the leg painless. Aspiration of soft tissue and bone marrow revealed neither pus cells nor organisms. Radiography three weeks after admission revealed separation of the upper tibia and fibula, more suggestive of tumour than of infection (Fig. 2). A biopsy was performed the following day and the pathologist reported the presence of a reticulum-cell sarcoma (Fig. 3). After consultation with the radiotherapist, deep x-ray therapy was started immediately. The tumour continued to grow and in January, 1949, radiography showed gross decalcification of the tibia and a large soft-tissue tumour (Fig. 4). The swelling increased rapidly and the general condition deteriorated. The child could neither eat nor sleep because of severe pain, and the almost hopeless nature of the condition was explained to the parents. They agreed to a palliative amputation to allow their child to die in relative comfort. Mid-thigh amputation was performed.

Fig. 1.—On the day following admission an antero-posterior radiograph shows an area of decalcification in the upper tibial metaphysis (August, 1948).

Fig. 2.—Three weeks after admission, a radiograph shows sclerosis of the upper tibia and subperiosteal new bone formation. The lateral view shows separation of the tibia and fibula suggesting a diagnosis of tumour.

Fig. 3.—A biopsy specimen stained for reticulum cells shows malignant reticulum cells (August, 1948).

Fig. 4.—Radiograph taken after mid-thigh amputation shows large soft-tissue tumour (March, 1949).
FIG. 3.—Photomicrograph (x 250) shows rapidly growing sarcoma, highly vascular and invading muscle tissue. Tumour cells are producing reticulum or fibrous stroma suggesting a poorly differentiated fibro- or reticulum-cell sarcoma (confirmed by silver impregnation).


in February, 1949, five months after her first admission, she made a rapid and uneventful recovery. She was comfortable and happy and rapidly put on weight, and the orthopaedic appliance department of the hospital made a temporary prosthesis. Four weeks after amputation she was toddling happily around the ward. An orthodox prosthesis was supplied in due course and five years after operation she is doing well at school and appears to be little handicapped by her artificial limb (Fig. 5).

**Discussion**

Even in retrospect the original radiographic appearances are quite compatible with a diagnosis of osteitis. With a temperature of 101°F and a positive blood culture such a diagnosis would seem more likely than neoplasm. The amputation specimen shows that although the bone is hyperaemic and decalcified, the tibial cortex is intact and the tumour appears to arise from between the tibia and fibula. Further sections confirmed the biopsy report and the many pathologists who examined the sections all gave a grave prognosis. We know only too well the fate of all cases of leukaemia, of malignant tumours of the central nervous system, of sympathicoblastomata of the adrenal and of most children with nephroblastomata of the kidney and rhabdomyosarcomata of the bladder. Textbooks of surgery and pathology are singularly unhelpful with regard to the outlook in the less common malignant tumours of infancy and childhood.
Apart from the present child, there have been 11 five-year cures of malignant disease during the period during which she has been under observation. The lesions were all treated by excision and radiotherapy and were as follows: soft-tissue sarcoma (three cases), nephroblastoma (Wilms tumor) (four cases), neuroblastoma (one thoracic, one pelvic), testicular teratoma and ovarian dysgerminoma.

Under the auspices of the Scottish Surgical Paediatric Club, a paediatric tumor registry has been started. The paediatric units in Scotland, both medical and surgical, will pool their material and in time we may learn something of the life history of the less common malignant tumors of infancy and childhood.

Summary

A case of reticulum-cell sarcoma in an infant is described briefly. The patient was treated as a case of haematogenous osteitis for three weeks before the diagnosis was made. Few individuals have extensive experience of this type of case and the paediatric surgeons of Scotland have gained the whole-hearted cooperation of the pathologists in forming a paediatric tumor registry.

The photographs were prepared by Mr. J. L. A. Evatt, A.R.P.S.